MICHIGAN DEPARTMENT OF HEALTH & HUMAN SERVICES

Michigan Regional Trauma Report

Region 2N



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EXECUTIVE SUMMARY

Region 2 North (R2N) is the second most populous region in Michigan. Its three counties, Oakland, Macomb, and St. Clair, are home to 2,213,930 people, approximately 22.5% of the population of Michigan. Within the region are several universities and colleges, a large business and technology sector, and a very large industrial sector. All of the "Big Three" of the auto industry, General Motors, Ford and Chrysler have operating facilities in the region, along with numerous other manufacturing entities.

Also located in R2N are several entertainment venues including sports arenas and music complexes that see year round activities with large numbers in attendance. R2N has several major highways that accommodate millions of automobiles annually and serve as a major transportation corridor for commercial vehicles moving goods from transportation centers across the Midwest. Interstates 75 and 96 are the major north-south and east-west routes.

R2N also shares an international border crossing with Canada at Port Huron. The Blue Water Bridge has 15,000 to 20,000 vehicles crossing daily, 6,000 of those vehicles are heavy trucks transporting goods across the border. There is also a rail tunnel in the same area that moves millions of tons of goods from the Midwest region across the border each year. The rail lines that feed traffic to this rail tunnel crisscross R2N communities with numerous crossings on major roads.

The R2N trauma network, working with the Region 2 North trauma advisory committee has developed bylaws consistent with state administrative rules, and submitted a Regional Trauma Network application to the Michigan Department of Health & Human Services (MDHHS), and was recognized by MDHHS as a Regional Trauma Network (RTN). The RTN work plan included in the application addresses injury prevention, access to the system, communications, medical oversight, pre-hospital triage criteria, trauma diversion policies, trauma bypass protocols, regional trauma treatment guidelines, regional quality improvement plans and trauma education.

The RTN has been tracking and documenting ongoing system development, in order to provide quarterly and annual reports to MDCH. The report describes progress toward system development, demonstrates on-going activity, and includes evidence that members of the regional trauma advisory committee are currently involved in trauma care.

SYSTEM GOVERNANCE

The Region 2 North Trauma Network (RTN) is made up of the medical directors and executives of the Medical Control Authorities (MCAs). The membership of the RTN was very active in the creation of the RTN application, as well as the ongoing monitoring of the work plan and goals. Each member of the RTN is active in the Regional Trauma Advisory Committee's (RTAC), which is actively looking at injury prevention, trauma education, trauma operations and trauma treatment.

The RTAC is comprised of representatives from each of the region's 17 hospitals, EMS representatives from each MCA, as well as other regional partners. The responsibilities of the Regional Trauma Advisory Council (RTAC) include providing leadership and direction for the development of the regional trauma system and to monitor the performance of the system once it is implemented. This will eventually include the review of the regional data used to enhance system performance and drive change.

The leadership for the Region 2 North Trauma Network is very active in working towards a statewide trauma system. The hospital representatives from the RTAC have been very willing to assist with meeting venues, training centers and staff to assist with the much needed training in areas such as data collection,

injury prevention and patient care. The staff from our verified trauma centers has offered guidance and ideas to hospitals that are in the beginning stages of this process.

OVERALL PROGRESS ON WORK PLAN

The RTN application submitted to MDHHS utilized the Health Resources and Services Administration (HRSA) model which describes trauma system indicators and offers a scoring process: meeting the highest score (5) in every indicator would describe a mature highly functioning trauma system.

In the overall scoring of the Region 2N Trauma Network against the HRSA model indicators, and where it is as a system, Region 2N had a total score of 32 out of 100. Many areas were scored as either not having developed, or having minimal development. This helped the RTN and RTAC focus discussion and planning on how to strengthen and advance current processes in order to support the regional trauma system. Assessments of hospitals were conducted to ascertain what injury prevention programs they have, what level trauma center they anticipate they will work towards, and what systems needs each facility has in order to submit data to the state.

In 2013, the 2 North RTN developed bylaws, and made some updates and changes with direction from the State of Michigan. The bylaws were presented to the RTAC membership and agreed upon. In the first year post application submission, the RTAC has been focused on establishing subcommittees to assist with the processes required by the administrative rules (trauma operations, trauma treatment, injury prevention and trauma education) to meet verification and designation requirements. The trauma operations committee established 4 workgroups; triage and transport, dispatch, communications and trauma registry. Each group as the name implies is has a specific area of the RTN application objectives that they are responsible for.

To assure the vital components of the trauma system are being put into place into place the region has reached out to hospitals, EMS, MCA, and other partners to get their participation in our regional meetings and input on plans.

2014 ACCOMPLISHMENTS

The Trauma Treatment Guidelines committee has worked on the criteria for the transfer of trauma patients between facilities and the guidelines to be followed. This includes the nature of injuries, timeframes and documentation of transfer of patients. The committee has created a survey looking at inter-facility transfers in order to identify opportunities for improvement. The Injury Prevention committee has developed a network between all of the Injury Prevention coordinators at the hospitals and meets by teleconference frequently. They participated in a joint project during the Woodward Dream cruise where all of the hospitals across the region distributed Injury Prevention materials from all of the facilities, at 5 areas along the route.

2015 MAJOR FOCUS

The Trauma Education Subcommittee is working to establish regional recommendations for education of providers at all levels involved in the trauma system. They are using the ACS requirements as their guidelines for the in-hospital providers and are planning on having baseline recommendations for the region. The education recommendations they are working on for pre-hospital providers is designed to provide some additional trauma education above the minimum the state requires for re-licensing.

DEVELOPING THE REGIONAL TRAUMA NETWORK

According to the American College of Surgeons, "an ideal trauma system includes all the components identified with optimal trauma care, such as injury prevention, access to the trauma system, pre-hospital care and transportation, acute hospital care, rehabilitation, and research activities. The term inclusive trauma system is used for this all-encompassing approach, as opposed to the term exclusive system, which focuses only on the major trauma center."

The State of Michigan's trauma system development is making great progress. This progress represents the commitment of the hospitals, partners and stakeholders in order to organize an accountable, coordinated, regional system of care for trauma.

This regionalized system of care requires an active, engaged Regional Trauma Network (RTN) and Regional Trauma Advisory Committee (RTAC). The Network is comprised of one representative from each Medical Control Authority (MCA). An MCA is by definition, a hospital or group of hospitals that operates a service that treats patients 24 hours a day 7 days a week. This RTN representative is expected to make decisions and commitments on behalf of their MCA (hospitals) to collectively further the work and mission of the Regional Trauma Network, as the voice for the MCA hospitals.

The RTN is the governing body of the Regional Trauma Network, and ultimately responsible for decisions, policy, procedure and any subcommittee work related to trauma in each of the state's 8 regions including the work of the Regional Trauma Advisory Council.

Each RTN appoints members from the region's medical community to participate in the RTAC. The RTAC is a committee established by the RTN and comprised of MCA personnel, EMS personnel, life support agency representatives, healthcare facility representatives, physicians, nurses, and consumers.

The functions of the RTAC are to provide leadership and direction in matters related to trauma systems development in their region, and monitors the performance of the trauma agencies and healthcare facilities within the region, including, but not limited to, the review of trauma deaths and preventable complications. Each hospital in Region 2N has representation on the RTAC, and the group is working on injury prevention, data collection, medical oversight and other initiatives.

EPIDEMIOLOGY

Every individual in the world is at risk for traumatic injury. The kinds of injuries are as diverse as the backgrounds of its victims. Traumatic injuries range from domestic violence and terrorism to motor vehicle crashes and workplace accidents. Although trauma is often thought of as an individual events affecting the person or people directly involved in the accident, traumatic injury needs to be seen as a disease – one that affects all ages, races and genders. This disease is acute in onset but often results in chronic, debilitating health problems that have effects beyond the individual victims. There are identifiable broad trends in the epidemiology of trauma within certain age groups and areas of the country, but injury has an impact in every community regardless of demographics¹.

According to the National Trauma Institute using data from the CDC:

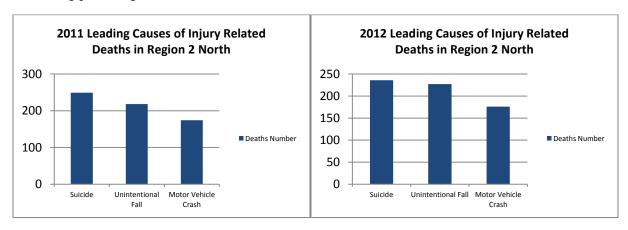
- Trauma is the #1 cause of death for Americans between 1 and 44 years old.
- Trauma is the #3 cause of death overall.

¹ Cinat ME, Wilson SE, Lush S, Atkins C: **Significant correlation of trauma epidemiology with the economic conditions of a community.** *Arch Surg* 2004, **139**:1350-1355

- Trauma injury accounts for 30% of all life years lost in the U.S.
- The economic burden of trauma is more than \$406 billion annually.
- Each year, more than 180,000 people lose their lives to trauma.

In Region 2 North, the three leading causes of death from injury are suicide, falls and motor vehicle crashes. The three leading injury related hospitalizations are due to unintentional falls, motor vehicle crashes and assault. The Region 2 North Injury Prevention committee utilizes this information, along with the injury prevention plans of the trauma centers to help create a regional injury prevention plan that all the hospitals and EMS agencies will participate in.

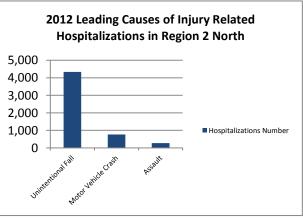
In Region 2 North the top three leading causes for injury related deaths in 2011 are as follows: suicide (excluding poisoning and overdoses), falls and motor vehicle crashes. In 2012 they include: suicide (excluding poisoning and overdoses), falls, and motor vehicle crash.



Source: Thomas W. Largo, MPH, Division of Environmental Health, Bureau of Disease Control, Prevention, and Epidemiology, Michigan Department of Health & Human Services, 2011 and 2012 data.

In 2011 the top three causes for injury related hospitalizations include: falls, motor vehicle crashes and assaults. In 2012 the top three causes for injury related hospitalizations in Region 2 North include: falls, motor vehicle crashes and assaults.





Source: Thomas W. Largo, MPH, Division of Environmental Health, Bureau of Disease Control, Prevention, and Epidemiology, Michigan

Department of Health & Human Services, 2011 and 2012 data.

THE REGIONAL WORK PLAN

Administrative Rule 325.132 requires that each regional network submit a comprehensive system development plan as a component of the application for recognition as a Regional Trauma Network (RTN). The Region 2N Trauma Network met as a group first and decided on some basic objectives for each of the 11 required application components. Once this was completed the RTN and the RTAC met as a group and assessed the current status of the region's trauma system. The RTN and RTAC members then took on the task of writing SMART objectives (specific, measurable, attainable, relevant, and timebound) for each indicator, with the understanding that progress towards a mature, fully functioning, all inclusive regional trauma system is the goal. These written objectives have served as the region's system development plan for the first 3 years of the regionalization process.

The application asked each region to address the 11 required components listed in the State of Michigan trauma system administrative rules. The components are:

- 1) System governance
- 2) Injury prevention
- 3) Access to the system
- 4) Communications
- 5) Medical oversight
- 6) Pre-hospital triage criteria
- 7) Trauma diversion policies
- 8) Trauma bypass protocols
- 9) Regional trauma treatment guidelines
- 10) Regional quality improvement plans
- 11) Trauma education

Each of the following eleven subsections corresponds with the eleven work plan components. The subsection begins with the 2006 HRSA *Model Trauma System Planning and Evaluation* indicator, followed by progress toward that indicator during FY 2014 ("Achievements"), and concluding with objectives for 2015 ("2015 FOCUS").

SYSTEM GOVERNANCE

Each region shall establish a regional trauma network. All Medical Control Authorities within a region must participate in a regional network and life support agencies shall be offered membership on the regional trauma advisory council. Regional trauma advisory committees shall maximize the inclusion of their constituents. The regional trauma network establishes a process to assess, develop and evaluate the trauma system in cooperation with the regional stakeholders in trauma care.

ACHIEVEMENTS

The governance structure and communication pathways are clearly demonstrated through RTN organizational charts. All required procedures required for the 2N system governance have been implemented in accordance with the R2N bylaws. The Region 2N RTAC implemented a regular meeting schedule and actively provided assistance and guidance to the RTN regarding trauma related activities. The RTAC subcommittees were very active and produced the beginning framework on which the RTN will continue to build the trauma program.

2015 FOCUS

During the 2015 application year, the RTN with guidance from the RTAC will work to further the inclusion of all of the stakeholders in the region in the trauma care process. The RTN will accomplish this through regular meetings with the various stakeholders. These meetings will continue to produce minutes, agendas and attendance records which will be submitted, and reference in the annual reports. The RTAC and RTN will work together and use data collected through surveys and registry entry, performance evaluation and assessments to identify and prioritize and address any issues that may occur in the region. These findings will also be reported in the annual report and shared with the stake holders.

INJURY PREVENTION

The RTN, in cooperation with other agencies and organizations, uses analytical tools to monitor the performance of population-based (regional) injury prevention programs.

ACHIEVEMENTS

The RTN established an Injury Prevention subcommittee within the RTAC, which is tasked with identifying the injury prevention programs within the region and begin collecting data. The data collected will include; the population served evaluations of the individual programs and the long term effects to change in Mechanism of Injury. This committee will also develop a written plan to coordinate the injury prevention program activities. The plan will include a method of collecting data to measure the success of the individual programs and to develop additional programs that are needed and methods to improve the existing programs. The Injury Prevention committee has developed a network of all of the Injury Prevention coordinators at the hospitals and meets by teleconference frequently. They participated in a joint project during the Woodward Dream cruise where all of the hospitals across the region represented at 5 spots along the route distributed Injury Prevention materials from all of the facilities.

2015 FOCUS

During the 2015 application period the RTN will work on completing a first draft of the written regional Injury Prevention plan that will ultimately be implemented under the direction of the RTAC. The Injury Prevention Subcommittee will continue to collect data and measure success of the plan by evaluation in changes related to mechanism of injury in the region. The committee is also planning to expand their joint hospital project to community venues in all 3 Region 2N counties.

CITIZEN ACCESS TO THE SYSTEM

The trauma system is supported by EMS medical oversight of dispatch procedures and coordinated response resources. The trauma system EMS medical directors are actively involved with the development, implementation, and ongoing evaluation of EMS system dispatch protocols to ensure they are congruent with the trauma system design. These protocols include, but are not limited to, which resources to dispatch for Advanced Life Support vs. Basic Life Support, air-ground coordination and early notification of the trauma facility, pre-arrival instructions, and other procedures necessary to ensure dispatched resources are consistent with the needs of injured patients. There are sufficient, well-coordinated air and ground ambulance resources to ensure that EMS providers arrive at the trauma scene to promptly and expeditiously transport the patient to the correct hospital by the correct transportation mode.

ACHIEVEMENTS

The RTN has reviewed each MCAs trauma specific dispatch to evaluate how they fit in the trauma system design. The RTAC is evaluating the feasibility of consolidating the transport plans of the MCAs into a single regional transport plan with subdivisions of the MCA plans. The plan would include a method to evaluate the effectiveness of the system so that any corrective actions that are deemed necessary may be implemented.

2015 FOCUS

During the 2015 application period, the MCA transport plans will be evaluated for effectiveness and efficiency and to ensure that the proper resources are dispatched to the scene. Over and under triage will be used as an evaluation metric to gauge the effectiveness of the protocols. Any improvements or necessary changes that are identified through evaluation of the system will be implemented.

TRAUMA SYSTEM COMMUNICATIONS

The regional trauma system is supported by a coordinated communication system linking and integrated hospitals, life support agencies, the EMS system and the Regional Trauma Network. There are established procedures for EMS and trauma system communications for major EMS events or multiple jurisdiction incidents-that are effectively coordinated with the overall regional response plans. There is a procedure for communications among medical facilities when arranging for inter-facility transfers including contingencies for radio or telephone system failure.

ACHIEVEMENTS

The RTN working with the RTAC identified and reviewed the existing plans for inter-facility communications. The procedures for communication in the event of a system failure are being reviewed and discussions are in process as to what type of backup communication should be used. The committee is also in process of developing a training plan to be utilized once the definitive communication source has been agreed upon,

2015 FOCUS

During the 2015-2016 application periods, a plan for interoperable and redundant communications will be developed and evaluated on a scheduled basis to identify any problems or issue. The RTAC will be providing guidance to the RTN to make corrections of any issues that are identified.

MEDICAL OVERSIGHT

The regional trauma system is supported by active EMS medical oversight of trauma communications, pre-hospital triage, treatment, and transport protocols. There is well defined regional trauma system medical oversight integrating the specialty needs of the trauma system the medical oversight of the overall EMS system. There is a clearly defined, cooperative, and ongoing relationship between regional trauma physician leaders and the EMS system medical directors in the region.

ACHIEVEMENTS

Each of the Medical Control Authorities has a written trauma protocols for pre-hospital provider treatment and care of trauma patients which has been reviewed by the Trauma Medical Directors. The RTN Trauma Medical Directors and/or the Trauma Representatives are participating in regional medical oversight and are beginning to develop a relationship with the local Medical Control Authorities through participation in Trauma Network meetings.

2015 Focus

During the 2015 application period the RTN with the cooperation of the regional medical oversight committee will develop a system to evaluate the working relationships and will implement any improvements that are necessary to optimize the efficiency of patient care and transport.

PRE-HOSPITAL TRIAGE CRITERIA

The regional trauma system is supported by system-wide pre-hospital triage criteria. The region has adopted mandatory regional pre-hospital triage protocols to ensure that trauma patients are transported to an appropriate trauma center based on their injuries. The triage protocols are regularly evaluated and updated to ensure acceptable and region-defined rates of sensitivity and specificity for appropriate identification of a major trauma patient.

ACHIEVEMENTS

There are currently trauma triage protocols written and in use in each of the MCAs in the region. The membership of the operations committee are working on a plan to update these protocols so that the criteria of the individual trauma triage protocols of the regional MCAs include triage with the idea of regional trauma network taken into consideration.

2015 FOCUS

During the 2015 application period the RTN will work with the RTAC and the RTAC subcommittee to implement the suggested regional trauma triage recommendations and through data collection and evaluation of the outcome of the trauma patients determine if all are triaged appropriately and transported to the appropriate facilities for optimal care.

TRAUMA DIVERSION POLICIES

Diversion policies ensure that acute care facilities are integrated into an efficient system to provide optimal care for all injured patients. The regional trauma network plan should ensure that the number, levels, and distribution of trauma facilities are communicated to all partners and stakeholders. The RTN should develop procedures to insure that trauma patients are transported to an appropriate facility that is prepared to provide care. The state trauma registry is used to identify and evaluate regional trauma care and improve the allocation of resources.

ACHIEVEMENTS

The RTN has identified all regional facilities by their trauma levels, their system verification and designation approval and is working on recommendations for a regional system plan for diversion that consolidates the information and protocols of the MCAs in the region. The RTN is working on developing a method to monitor, support and track data entry into the state trauma registry.

2015 FOCUS

During the 2015 application period the RTN will continue to work on a written plan, and a way to utilize data collection to evaluate the process to ensure that the patients are being transported to the appropriate trauma facilities. The data collection plan will be evaluated for effectiveness and corrections made as necessary to ensure that data input is meeting the needs of the region.

TRAUMA BYPASS PROTOCOLS

The roles, resources and responsibilities of trauma care facilities are integrated into a resource efficient, inclusive network that meets standards and provides optimal care for injured patients. The regional trauma plan has clearly defined the roles, resources and responsibilities of all acute care facilities treating trauma, and of facilities that provide care to specialty populations (spinal cord injury, burns, pediatrics, other). There is a regional trauma bypass protocol that provides EMS guidance for bypassing a trauma care facility for another more appropriate trauma care facility.

ACHIEVEMENTS

The RTN completed an assessment of existing regional facilities and their capabilities that clearly defines the roles, resources and responsibilities of all licensed acute and specialty care facilities that operate within the region. The RTAC subcommittees have reviewed the individual MCA Bypass Protocols to guide the EMS providers operating in the region with specific criteria addressing the bypass of a facility for a more appropriate level of trauma care facility.

2015 FOCUS

During the 2015 application period the bypass protocols will be evaluated for efficiency and effectiveness to deliver optimal patient care. Any areas that are identified as being ineffective will be addressed and modified under the direction of the RTAC and the RTAC subcommittee.

REGIONAL TRAUMA TREATMENT GUIDELINES

The regional trauma network ensures optimal patient care through the development of regional trauma treatment guidelines. When injured patients arrive at a medical facility that cannot provide the appropriate level of definitive care, there is an organized and regularly monitored system to ensure that the patients are *expeditiously transferred* to the appropriate, system-defined trauma facility. Collected data from a variety of sources are used to review the appropriateness of all-inclusive regional trauma performance standards, from injury prevention through rehabilitation.

ACHIEVEMENTS

The RTN will is in the process of collecting data in order to develop a guidance document for monitoring current inter-facility transfers of trauma patients. The committee is currently collecting data to measure the frequency of transfers to ensure that the procedures are appropriate for optimal patient care.

2015 FOCUS

The RTN will begin working on regional performance standards, as subscribed in the administrative rules, as well as the most effective way to collect data to address performance metrics.

REGIONAL QUALITY IMPROVEMENT PLANS

The RTN/RTAC uses system data to evaluate system performance and regularly reviews system performance reports to develop regional policy. No less than once per year, the RTN generates data reports that are disseminated to all trauma system stakeholders to evaluate and improve system performance.

ACHIEVEMENTS

The RTN is in the process of developing a system for collecting data from the trauma information systems for the purpose of evaluation and analyses of system performance for the purpose of improving

the regional system of patient care. Several members of the Trauma Network attended ImageTrend training.

2015 FOCUS

During the 2015 application period routine data collection will occur and data will be evaluated for system performance and measures taken to improve the overall performance of the trauma system in the region.

TRAUMA EDUCATION

The regional trauma network ensures a competent workforce through trauma education standards. The regional trauma network establishes and ensures that appropriate levels of EMS, nursing and physician trauma training courses are provided on a regular basis

ACHIEVEMENTS

The RTN, with input from the RTAC subcommittee, has established a plan for trauma education that addresses the requirements of EMS personnel, nurses and physicians that work within the Regional Trauma System. The RTN will has developed a process for disseminating information to regional trauma care providers concerning new protocols and treatment approaches and the process will be in the testing stages to ensure that all providers are receiving information on changes that are occurring.

2015 FOCUS

During the 2015 application period the RTN will monitor the training and education that is established in the system plan to evaluate compliance by participants in the system. The RTN will monitor the process to ensure performance and compliance with any new protocols and procedures that are established within the region. When identified any necessary corrections to the system will be implemented.

BEST PRACTICES / SUCCESSES

The Regional Trauma Advisory Council has been established with membership from each of the medical facilities in the region represented and actively participating. The RTAC established 4 subcommittees. Each committee is gathering data for use in the meetings. Each of the committees has been broken down into work groups that tackle the various projects that they are working on.

The Injury Prevention Committee has been very active. They have developed a network between all of the Injury Prevention coordinators at the hospitals and meet by teleconference frequently. They participated in a joint project during the Woodward Dream cruise, where all of the hospitals across the region represented at 5 spots along the route that will be distributing Injury Prevention materials from all of the facilities. The committee is currently in the planning phases to do something similar at the Port Huron event where all of the sail boats come in and they expect about 100,000 people.

The Trauma Education subcommittee has established regional recommendations for education of all providers at all levels that are involved in the trauma system. They used the ACS requirements as their guidelines for the in-hospital providers and made suggestions for additional education for the region. The education recommendations they are working on for pre-hospital providers is in an effort to provide additional trauma education above the minimum the state requires for re-licensing.

Beaumont Hospital Royal Oak, Henry Ford Macomb, McLaren Macomb, St. Joseph Mercy Oakland, and Henry Ford Macomb Troy have all successfully been designated by the State of Michigan as Trauma Centers.

SUMMARY

Region 2N has participation from all their hospitals in the trauma regionalization initiative. Having several trauma centers in this region has been an asset in meeting the goals of the regional trauma plan. These facilities have shared their staff and processes in order to help those facilities still working on the verification process, as well as advancing the process of developing a regional injury prevention plan. Although faced with the challenge of having the Regional Trauma Coordinator vacant for much of the 2014 application year, the RTN and RTAC have continued to move the program forward.